Australia is set to become the world’s leading producer of LNG in the next decade. Major capital projects in unconventional gas on the country’s east coast are contributing to this growth trajectory, accessing Queensland’s abundant reserves of coal seam gas (or coal bed methane). In a world first, Queensland will produce LNG from coal seam gas (CSG), with three of five major LNG developments well into the construction phase and gearing up for first shipment from 2014.

The Competency Assurance and Training team at LogiCamms, an engineering and consulting services company in Australia and New Zealand, is currently working with a number of these large start-ups. In this article the company shares its solutions for workforce development in the LNG industry.

The QGC (wholly owned by BG Group) Queensland Curtis LNG (QCLNG) project is expected to be the first facility to produce gas. Situated on Curtis Island in Gladstone, the plant will have an initial capacity of 8.5 million tpy with the potential to increase production to 12 million tpy.

Santos is leading a joint venture of Petronas, Total and Kogas on the Gladstone LNG (GLNG) project. Also based on Curtis Island, this plant will have an initial capacity of 3.9 million tpy, with the potential to increase to 10 million tpy, and will receive gas from Santos’ gas fields in the Bowen and Surat basins.
The third project well into construction is the Australia Pacific LNG project (APLNG), a joint venture between Origin Energy, ConocoPhillips and Sinopec. With the largest potential production capacity at 33 million tpy, the first LNG cargo from this facility is scheduled for 2015.

A further two projects, the Arrow Energy LNG project and LNG Ltd’s Gladstone LNG Fisherman’s Landing project are still in the initial planning stages. Together, these projects are expected to generate over US$ 45 billion in capital expenditure and produce over 28 million tpy of LNG. With all projects having the potential to increase production levels to over 60 million tpy, it is expected that the Queensland and LNG boom will help lift Australia from the third largest exporter of LNG to the first.

Queensland’s skills shortage

One of the biggest challenges for Queensland’s LNG players is the recruitment and retention of skilled employees. Due to the infancy of the LNG industry within Australia and the volume of projects currently being undertaken around the nation and worldwide, Australia has found itself in the midst of a skills shortage.

Recent economic studies indicate that even a midsize LNG industry such as Queensland’s will employ over 30,000 people during construction and operation. As the state’s total population stands at 4.5 million and an established skilled workforce is lacking, this emerging industry is faced with a long term resourcing challenge.

State government agency, Energy Skills Queensland, produced a 2013 ‘Skills and Workforce Development Report’, which confirms an immediate expected increase in operations and maintenance roles for CSG and LNG. Critical job roles identified for downstream operation included various trade roles, enginering roles and project managers. The report also identifies 17 critical upstream roles. The fact that these roles are considered critical for both upstream and downstream indicates the focus required for workforce development.

People at the core of operational readiness

With any project, large or small, operational readiness is key to achieving return and should focus on people, plant and procedures; establishing systems and lifecycle plans that enable the equipment to meet its designed output as defined within a known budget. LogCamms’ Asset Performance team has witnessed projects that too often look to make cost savings during the construction phase, and do not fully consider the multiple decades that the facility will need to be operational. This results in millions of dollars being wasted and, in some cases, the return on the project never achieved.

Operations often focus on ensuring that the right equipment is purchased with the appropriate specifications and installed to the best standards. While all of this is important, the training and deployment of the people who will be expected to keep the operation and its equipment performing to its best is crucial. With a complete understanding of how a project is to operate, effective recruitment, practical training, and structured training plans and training that is tailored to the specific operation to support success for the life of the project.

Appropriately chosen and trained personnel underpin the success of the assets through their lifecycle, from operational readiness to asset integrity and operational excellence.

Identifying the skills gap

Whether working with a largely unskilled workforce, as in Queensland, or recruiting experienced staff, understanding of the operational direction and goals will enable effective planning of workforce requirements.

Task needs analysis process

An analysis of the tasks required of personnel and roles will set the foundations for recruitment and training. An analysis should clearly identify the knowledge, skills and behaviours that are required to carry out tasks safely, efficiently and to operational standards.

Recruitment strategy and training burden

Previously, individuals with non-industry experience have faced a great challenge finding an entry point to the LNG industry in Australia. So far, recruitment in Queensland’s LNG industry has indicated that companies are accepting staff from both industry and non-industry backgrounds to fill key roles. Previous experience may be loosely related, such as plant refineries, or completely unrelated, such as butchery.

With such varied skills, the burden on training will be high. As such, a carefully executed training strategy is paramount to make the activity as effective and efficient as possible.

Training strategy

In developing a training strategy, managers will be required to make decisions on how they wish to execute, for example, putting all staff in a planar and structured training to establish a baseline of knowledge and skills. Beyond this, the initial training considerations on how the skills will be applied need to be made. With plants still under construction and not yet operational there is clearly no place to practice.

Training strategies will need to take into consideration the specifications and manufacturer guidelines of the plant’s equipment, as well as industry standards. For Queensland operations, this will be the Australian Quality and Training Framework (AQTF). LNG operations can leverage these baseline standards to develop something tailored to their operations.

The actual training for these new projects is likely to be theoretical during the construction phase, with comprehensive on-the-job training tools to ensure that personal are supported both post-commissioning and for the life of the project. This is already being seen in the Queensland projects.

The training strategy put together for these types of operations ought to look even beyond the lifecycle of the project. With so much invested in training personnel, they are now an asset to the company.

Developing a local workforce

Over the mining boom years, Australia saw a massive increase in the number of people ‘flying in and flying out’ of remote mining operations, and skills developed in the sector. This was partly as a result of companies recruiting skilled and experienced labourers over training local personnel. With individuals ‘job hopping’ from one operation to the next for higher salaries (and being in a position to demand them), there came to be the expectation of high salaries in the sector by both the Australian and international labour market when seeking employment with Australian operations.

Companies with large/predominant ‘fly-in, fly-out’ workforces have faced criticism, but the argument is that the skills do not exist locally. In response, state governments and local councils often encourage companies to invest in the training and development of the local workforce for the sustainability of the local community and economy.

Problems arise when the numbers of potential staff in the regional areas, where many of these projects are based, are much lower than the number of available positions. It is a challenge to encourage suitable staff to move to these remote locations to take up long-term residence and employment.

LNG operations in Gladstone can benefit from the fact that it is a coastal town, with lots of infrastructure development in planning and implementation phases. It has the potential to comfortably attract families from other local communities for relocation for long-term employment and residence.

Benefits

There are a number of benefits that can be secured by employing locally, including the following:

Cost savings:

- Not having to set up large camp facilities.
- Fewer flights and allowance payments.

Retention:

- Increased retention of staff with people wanting to live in the area and work close to home for better work/life balance.

International portfolio/presence:

- With Gladstone set to be the largest international LNG port in Australia, it will see an influx of internationals through export. There is the potential to attract internationals to Gladstone by offering training and development, in turn developing educational capabilities, and attracting other professions to the region.

Reputation:

- Recruiting locally is great for building public relations within local communities.

Looking to the future

It has been observed in many existing operations around the world that training is still not enough of a proactive and planned occurrence – it is often reactive to a problem arising rather than a proactive phenomenon.

In the US, there are currently 17 proposal submissions for the export of natural gas, with the first shipments of gas (to be exported as LNG) scheduled for 2015. In a wholesale redisposition, the US will shift from immediate exporting, to an exporting hub. This will require a massive development of skills in LNG processing.

A behavioural change is required to plan for effective training of all personnel early in the planning and structured manner to deliver high performance operations in a sustainable way. These training trends will need to change fast for the US to develop the skill sets for operational readiness, if the proposals are approved.

With gas booming all over the world, and government and local requirements applying more pressure and regulations around the development of local workforces, companies now have to demonstrate how they plan to work within these requirements to set up operations in the area. Many local governments are wisely insisting that there is a maximum possible usage of nationals in any new operations, to ensure the country’s future capability and overall economic development.

The current development in Queensland makes an ideal test case. The international players currently setting up operations can apply the learning from developing local with varied levels of skill to these new environments. In this instance, adaptation will certainly be easier than creation.